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**AB 739 Effectiveness  
Assessment Guidance for  
SWRCB Permitting Staff  
Draft Outline: 11/25/2008**

# I. Introduction

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- Provide background on ms4 permits in CA, including the current state of assessment requirements in those permits.
- Define effectiveness assessment and describe why it's important.
- Provide an overview of key assessment initiatives and efforts, ending with AB 739.

## II. Purpose of this Guidance Document

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- Compliance with stormwater permitting requirements;
- Reduction of pollutant loads from pollution sources;
- Reductions of pollutants or **stream erosion (#1)** due to stormwater discharge; and Improvements in the quality of receiving water in accordance with water quality standards.

### COMMENTS:

**#1** this opens the door to hydromodification and discuss CASQA methods that do not directly address stream erosion, but can accommodate it. We can either address it as part of a broader discussion of Level 4 outcomes, or include a separate discussion somewhere else.]

# III. Program Planning and the Iterative Approach

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- Discussion of how assessment fits into the overall cycle of planning-implementation-assessment-modification; discuss need for iterative approach, not setting assessment requirements too rigidly. Look at CASQA Chapter 3 for source material.

# IV. Standard Elements for Effectiveness Assessment Approaches

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- Overview of the main elements of effectiveness assessment per CASQA. Reference CASQA as the primary source for the concepts presented, but emphasize the importance of consulting other existing efforts / resources.
- This section will establish standardized terms and definitions. Much of this can be pulled directly from the most recent version of the CASQA white paper.

# IV. Standard Elements for Effectiveness Assessment Approaches

## A. Six Levels of Assessment Outcomes

- Define and describe the six levels of assessment outcomes.
- Describe the hierarchy (pyramid) of assessment outcome levels. (#1)

## B. Three General Types of Effectiveness Assessment

- 1. Implementation Assessment (Levels 1-4)
- 2. Water Quality Assessment (Levels 5 & 6) (#2)
- 3. Integrated Assessment (Levels 1-6)

### COMMENTS:

#1 need to discuss whether or not to present this since many people feel it gives an unrealistic impression that the goal of assessment should always be to get to the “highest” level.

#2 this seems dependent upon each of the MS4 watersheds (i.e., small part of several or all in one)

# IV. Standard Elements for Effectiveness Assessment Approaches

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## C. Assessment Measures

- Introduce and explain the types of measures used in effectiveness assessment.
- CASQA Definition: Assessment Measures are established to determine whether or how successfully a programmatic or water quality outcome has been achieved. They may be qualitative (e.g., yes / no) or quantitative (% of targeted audience reached, % reduction in a constituent level, etc.). This is dependent on the availability of adequate information.
- Define the relationship of targeted outcomes (goals, benchmarks, etc.) and measures (i.e., results).

# IV. Standard Elements for Effectiveness Assessment Approaches

## D. Assessment Methods

- [Introduce and explain assessment methods. See above regarding distinctions between measures and methods. Explain the relationship of Level 1 verification and feedback activities as methods for assessing other levels.]
- **CASQA Definition: Assessment Methods are the specific activities, actions, or processes used to obtain and evaluate assessment data or information (#1)**

### COMMENTS:

**#1** this seems dependent upon each of the MS4 watersheds (i.e., small part of several or all in one)



# V. Primary Considerations in Establishing Permits Requirements for Effectiveness Assessment

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As an introduction to the sections to follow, present an approach that divides the six levels described above into four groups of outcomes corresponding to:

- (1) stormwater programs
- (2) implementing populations
- (3) source load reductions
- (4) water quality

## COMMENTS:

**#1** A figure would be helpful. We also need to discuss this because it's a slight variation on CASQA, but it's a very important organizing principle for establishing potential permit requirements.

# V. Primary Considerations in Establishing Permits Requirements for Effectiveness Assessment

## A. Assessment of Stormwater Program Activities (Level 1)

### 1. Level 1 Assessment Objectives

### 2. Typical Elements of a Municipal Stormwater Management Program

- Land Development Activities (including planning, construction, and post-construction phases)
- Residential Areas and Sources (including adults and schoolchildren)
- Industrial and Commercial Sources (including stationary and mobile)
- Municipal Sources and Operations
- Public Education
- Public Participation
- Illegal Discharge / Illicit Connection Detection and Elimination

### 3. Classification of Program Activities

- a. Program Planning and Administration
- b. Facilitation of Level 2-6 Outcomes
- c. Verification and Feedback

# V. Primary Considerations in Establishing Permits Requirements for Effectiveness Assessment

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## A. Assessment of Stormwater Program Activities (Level 1)

### 4. Outcomes, Measures, and Methods

- Present and describe examples of outcomes, measures and methods applicable to each of the three groups of activities above.

# V. Primary Considerations in Establishing Permits Requirements for Effectiveness Assessment

## B. Assessment of Outcomes in Target Populations (Level 2 and 3)

### 1. Level 2 and 3 Assessment Objectives

- [Establish objectives for conducting Level 2 and 3 assessments. Examples are below.]
- To identify attitudes and barriers to change in target audiences;
- To demonstrate that targeted changes to knowledge and awareness have occurred in target audiences;
- To demonstrate that targeted changes to behavior have occurred in target audiences;
- To demonstrate compliance with minimum Permit requirements;
- To foster management effectiveness by ensuring the measurability of specific program activities;
- To provide an informational basis for assessing the effectiveness of Level 1 stormwater program activities in achieving intended outcomes in target audiences (Levels 2-4); and
- To demonstrate that intended outcomes are being cost-effectively achieved.

# V. Primary Considerations in Establishing Permits Requirements for Effectiveness Assessment

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## B. Assessment of Outcomes in Target Populations (Level 2 and 3)

### 2. Outcomes, Measures, and Methods

- Knowledge and Awareness
- Behaviors and BMP Implementation

# V. Primary Considerations in Establishing Permits Requirements for Effectiveness Assessment

## C. Assessment of Source Reductions

### 1. Pollutant Load Reductions (Outcome Level 4)

- (a) Level 4 Assessment Objectives
- [Establish objectives for conducting Level 4 assessments. Examples are above.]
- (b) Outcomes and Measures
- [Present and describe examples of outcomes and measures applicable to assessing load reductions.]
- (c) General Approaches to Assessing Source Load Reductions
- [Present examples of load reduction approaches that may be required or encouraged.]
- Direct measurement (sweeping, waste collection, etc.)
- Monitoring (structural controls, site runoff, watersheds, basins, etc.)
- Inference from BMP implementation (e.g., implementation rate times efficacy)
- Inference from design capacities
- Inference from compliance results
- Coefficients and assumed parameters
- (d) Uncertainties and Limitations Inherent in Estimating Source Load Reductions
- [Discuss uncertainties in estimating load reductions. This is extremely important since load reductions are an ideal in most cases. Discuss load reductions in the context of program planning vs. assessment. Introduce static versus dynamic methods. Emphasize real-world limitations on data collection.]

# V. Primary Considerations in Establishing Permits Requirements for Effectiveness Assessment

## C. Assessment of Source Reductions

### 2. Changes in Runoff Volume, Velocity, or Duration

- [Note: This heading includes both on-site management (e.g., infiltration) and off-site discharges of runoff]
- (a) Assessment Objectives
- [Establish objectives for reducing runoff volume, velocity, or duration. Examples are above.]
- (b) Outcomes and Measures
- [Present and describe examples of outcomes and measures applicable to reducing runoff volume, velocity, or duration.]
- (c) General Approaches and Limitations to Assessing Reductions in Runoff Volume, Velocity, or Duration
- [Present and briefly discuss examples of approaches that may be required or encouraged.]
- Inference from site design (e.g., disconnecting pervious surfaces)
- Inference from design capacities of structural controls
- Inference from compliance results (O&M verification, inspection)
- Monitoring (structural controls, site runoff, etc.) [Only included here because it's possible; not recommended]

# V. Primary Considerations in Establishing Permits Requirements for Effectiveness Assessment

## C. Assessment of Source Reductions

### COMMENTS:

- #1 Include discussion per Mark's comment regarding making sure that treatment controls are properly designed and constructed. This is critical here since all approaches are very limited. The argument should be that, since, ongoing post-construction measurement of flows is impracticable in the real World, we should instead rely on quality design standards and approval processes to ensure that objectives are achieved. Some regions have post-construction O&M verification or inspection requirements, but this only provides a process for identifying and correcting non-compliance or failure to maintain BMPs. Compliance data are too general to be used in assessing ongoing reductions to runoff volume, velocity, or duration, except in a very speculative sense.]
- Might this fit better where BMPs are first covered in this guidance and where design and approval are operative - under level 1 or 2/3? Also, it seems quality design stds. would apply to / help achieve pollutant reduction as well as runoff changes.



# **V. Primary Considerations in Establishing Permits Requirements for Effectiveness Assessment**

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## **D. Water Quality Assessment (Levels 5 and 6)**

- **Monitoring program quality issues per SB 72 (inclusion of the right elements, data comparability, etc.)**
- **Variability and changes in pollutant concentrations over time**
- **Biomonitoring and changes over time**

# V. Primary Considerations in Establishing Permits Requirements for Effectiveness Assessment

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## E. Integrated Assessment

- The role of source load reductions [In most instances, this is the missing link.]
- Encouragement versus requirement [Integration should definitely be encouraged. It may be futile to require much more.]
- Timeframes for conducting integrated assessments [Not currently feasible to expect annually.]

## V. Additional Considerations in Setting Permit Requirements

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Describe key issues that are not encapsulated above, but which need to be considered in setting achievable and effective requirements.

- Determining the “significance” of individual activities and outcomes; not everything can or should be reported or assessed; we should encourage caution in determining significance through the permitting process unless necessary;
- Cumulative assessment across program elements and the program as a whole;
- Watershed or water quality as a driver of assessment requirements versus the “preventive” approaches inherent in most existing requirements;
- Permit- versus permittee-generation of detailed assessment requirements; the role of dialogue before and after permit adoption;
- Ensuring adequate process and timelines for consistently implementing new requirements (for collaborative permittee development, RWQCB review and approval, modifications to permittee programs, etc.);
- Real-world limitations (data collection and management, sufficiency of analytical / method)

## V. Additional Considerations in Setting Permit Requirements

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Describe key issues that are not encapsulated above, but which need to be considered in setting achievable and effective requirements.

- Factors relevant to setting targets and goals for outcomes (this is a huge topic);
- Geographic Scale (jurisdictional, watershed, regional)
- Comparability within permit regions
- Comparability across permit regions (minimum standards for statewide consistency should be established through this guidance);
- Change -- Continuous improvement, program modifications, ...
- Costs and Benefits
- Timeframes for Assessment (ST vs. LT) – (example of SD Permit requiring LTEA on a five-year timeframe)
- All permits have a fiscal analysis requirement. What are the appropriate measures to assess fiscal analysis?

# Attachments

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a. Recommended Resources [incomplete list]

Add a brief description of each resource to give readers a sense of their purpose and applicability. Reference resources in appropriate locations in this guidance.

- *A Framework for Assessing the Effectiveness of Jurisdictional Urban Runoff Management Programs* (San Diego Stormwater Copermittees, October 2003)
- *MS4 Program Evaluation Guidance* (USEPA, January 2007)
- *Municipal Stormwater Program Effectiveness Assessment Guidance* (California Stormwater Quality Association, May 2007)
- *An Introduction to Stormwater Program Effectiveness Assessment* (California Stormwater Quality Association, Updated June 2007)
- *Evaluating the Effectiveness of Municipal Stormwater Programs* (USEPA, January 2008)
- *Monitoring to Demonstrate Environmental Results: Guidance to Develop Local Stormwater Monitoring Studies Using Six Example Study Designs* (Center for Watershed Protection, August 2008)

# Attachments

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## b. Examples of adopted permit language (incomplete list)

- San Diego Permit
- S. Orange County Permit
- Stockton Permit
- Phase II Permit
- c. ????????